

11-16-12P12:16 RCVD

POST INSPECTION MEMORANDUM

Inspector: Al Jones, UTC
Reviewed: Joe Subsits, UTC 9/6/2012
Peer Reviewed: RR ✓
Follow-Up Enforcement: No Violation
~~PCP*~~ ~~PCO*~~ ~~NOA~~ ~~WL~~ ~~LOC~~
Director Approval* CJH
12/15/12

Date: April 23, 2012

Operator Inspected:
Olympic Pipe Line Company
2201 Lind Ave. SW, Suite 270
Renton, WA 98057

OPID: 30781

Region: Western

Unit Address:
Allen Station
14879 Ovenell Road
Mount Vernon, WA 98273

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State of Washington
UTC
Pipeline Safety Program

Unit Inspected: Incident Follow-up and Site Visit at Allen Station
Unit Type: Interstate Hazardous Liquid
Inspection Type: Pressure Data, and Photos - IO3
Record Location: Renton, WA
Inspection Dates: April 2 and 10, 2012
AFOD: 2
SMART Activity Number: 141596

Failure Investigation

Unit ID: 925

Operator Contact: Dave Barnes, DOT Compliance Manager
Phone: (630) 536-3419 **Fax:** (630) 420-5519

Emergency: (888) 271-8880

Unit Description:

Allen Station received refined products from:

- The north at BP Cherry Point and ConocoPhillips refineries in Bellingham via a 16-inch line through the Bayview Terminal and
- The west at Tesoro and Shell refineries in Anacortes via a 16-inch line through the Bayview Terminal.

The two 16-inch pipelines from the Bayview Terminal to the Allen Stations are each about 1.2 miles in length. From the Allen Station the refined products are transported south through a 16-inch and 20-inch pipelines to Seattle, Tacoma, Olympia, Castle Rock and Portland, Oregon. The refined petroleum product include gasoline, diesel and jet fuels.

Facilities Inspected and Chronology of Events:

- On Saturday, March 31, 2012 at about 6:42 AM, the sampling port on the 20-inch line launcher failed and released about 84 gallons of diesel (NRC # 1007393). The pipeline system was shut down for about 12 hours for repairs and cleanup. All released product drained to the containment area and sump. The valve handle at the sampling port was found in the closed position, but the valve was in the open position.
- On Sunday, April 1, 2012 at about 00:40 AM the thermal safety relief valve at the same launcher opened and closed rapidly for a period of time causing the associated piping or “tree” to vibrate rapidly. The pressure gauge at the top of tree failed releasing about 10 gallons of diesel (NRC # 1007458). The pipeline was shut down for about 12 hours for repairs and cleanup. All released product drained to the containment area and sump. On March 12, 2012 the thermal relief valve was changed out and reset to 925 psi. Prior to March 12th the relief was set at 1,100 psi. The 20-inch pipeline has a MOP of 928 psi.
- On Monday, April 2, 2012, I met with Dennis Johnston at the Allen Station to inspect repairs and view the disconnected thermal safety relief valve and failed pressure gauge. The pipeline was operating and product was by-passing the 20-inch launcher, normally product is allowed to flow through the launcher. The sampling port that failed on Saturday was removed from the Station. The piping “tree” at the 20-inch launcher was reconfigured to mitigate future vibration from the thermal relief valve by isolating the pressure gauge from piping “tree.” Exhibits A and B include photos of the components removed from the pipeline at the Allen Station.
- On Tuesday, April 10, 2012, I met with Kurt Hayashida at Olympic’s Office in Renton to view the failed sampling port. Exhibit A, Photos #2, 3, and 4 are of the failed port. There were no visible manufacturer’s marks on the port to verify the rated pressure. There are about fifty to seventy-five ports of this type in use on the pipeline. Information was available on the replacement port and manufacture’s specification.

Persons Interviewed:

Persons Interviewed	Title	Phone No.
Jim Bruen	DOT Compliance Advisor	630-536-2535
Rose Ann Lopez	Area Operations Manager	425-227-5213
Dennis Johnston	North Core Team Leader	360-454-0365
Kurt Hayashida	NW Engineering Team Leader	425-226-8881

Probable Violations/Concerns:

None.

Follow up on the history of prior offenses that are still open:

Prior Offenses (for the past 5 years)		
CPF #	What type of open enforcement action(s)?	Status of the regulations(s) violated (Reoccurrence Offenses, Implement a NOA Revision, Completion of PCO or CO, and etc...)

Recommendations:

Maintain normal inspection cycle.

Comments and Investigation Chronology:

- On April 4, 2012, Olympic Pipe Line provided all pressured data (Exhibit C) for the 20-inch diameter launcher from noon on Friday, March 30, 2012 to the time of the second release on Sunday, April 1, 2012. The data provided is not complete. The data contains 597 pieces of pressure readings with about 11% duplicates. The MOP of the 20-inch pipeline is 928 psig. In reviewing the pressure data, there are inconsistent times in reporting pressures and gaps in the data. As an example: "31-Mar-12 22:31:10 at 926 psi" and the next data in sequence states, "31-Mar-12 23:41:55 at 923 psi." In contrast, other readings are in one second intervals.
- On April 10, 2012, Olympic was requested to provide all missing pressure readings in order to fully evaluate the condition prior to and subsequent to the event on March 31 and April 1, 2012.
- On Thursday, April 12, 2012 Olympic provided a second set of SCADA data for the same period. Jim Bruen explained that duplication in the data was because two distinct communication paths from the satellite and terrestrial sources transmit the same data back to the SCADA host. Also, he explained if there were periods where the pressure values did not change, then the time frequency between data entries may vary.
- On Thursday, April 19, 2012, Olympic was requested to provide a copy of the OQ records for each member of the Operations Team that responded to the two requests for pressure data.
- On Friday, April 20, 2012, Jim Bruen stated in an email that BP's Operations Team is not considered a covered task when they are copying data out of the SCADA system and are not affecting the operation or integrity of the pipeline.
- Exhibit D – Record Attachment contains Jim Bruen verification email that the operating pressure did not exceed the MOP.

Summary:

Kuang Chu inspected the Olympic North Unit the week of August 20, 2012 and determined the following regarding the Allen Station leaks:

The thermal relief valve (TRV) for the 20" pig launcher at the Allen Station was erroneously reset to 925 psi in 2010 while the system MOP is 928 psi. The frequent relief caused the piping to vibrate. The sampling port failed on 3/31/2012 and the pressure gage failed on 4/1/2012 as a result of vibration. Both incidents caused spills of product from the system. The root cause analysis identified the wrong set point for the TRV as the primary reason of the failure and subsequent spills. The set point was reset to 1.06 times of MOP (928 psi) and is now at 984 psi. The TRV will open only under shut-in condition while the system is under no-flow condition and the product temperature is elevated due to radiation from sun.

Attachments:

- Exhibit A – Photos of March 31, 2012 Incident and April 10, 2012 failed component.
- Exhibit B – Photos of April 1, 2012 Incident
- Exhibit C – Allen Station Pressure Data at 20-inch Launcher received April 4, 2012.

Exhibit A

March 31, 2012 - BP Olympic Pipeline, Allen Station Incident



Photo #A-1 of 4

This photo is the typical style of port used at the Allen Station before the incident. This port is in use at a different launcher. The actual sampling port that failed on Saturday, March 31, 2012 was not at the Station.

Photo taken 4/2/2012 by Al Jones

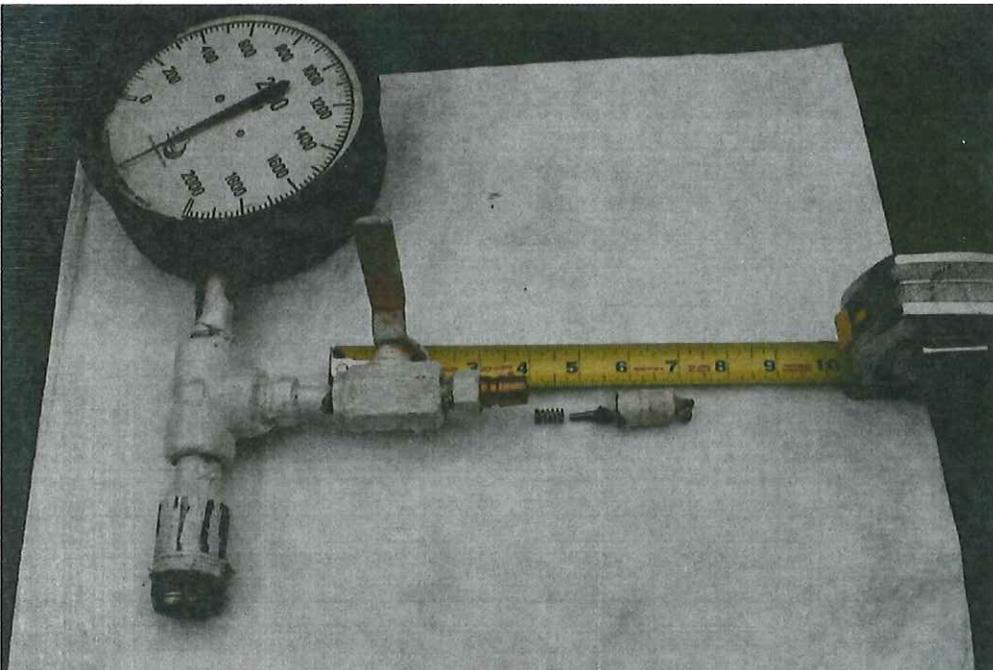


Photo #A-2 of 4

This is the actual sampling port/coupling that failed. Kurt Hayashida reported the valve was found in the closed position, but was actually open.

Photo taken 4/10/2012 by Al Jones



Photo #A-3 of 4

Failed sampling port/coupling from left to right: coupling housing, retainer spring, pin, and weather cap.
Photo taken 4/10/2012 by Al Jones



Photo #A-4 of 4

End view of failed sampling port/coupling. The stainless interior part is the seat for the spring.
Photo taken 4/10/2012 by Al Jones

Exhibit B
April 1, 2012 - BP Olympic Pipeline, Allen Station Incident



Photo #B-1 of 4

Thermo relief valve (left) and back side of pressure gage (right). Both interments were removed from the 20-inch launcher. Tag states, "TRV removed: 4/1/2012, Tested: 4/2/2012, Found: 925 lbs., Left: 925 lbs." and signed by Ryan Parrauet

Photo taken 4/2/2012 by Al Jones

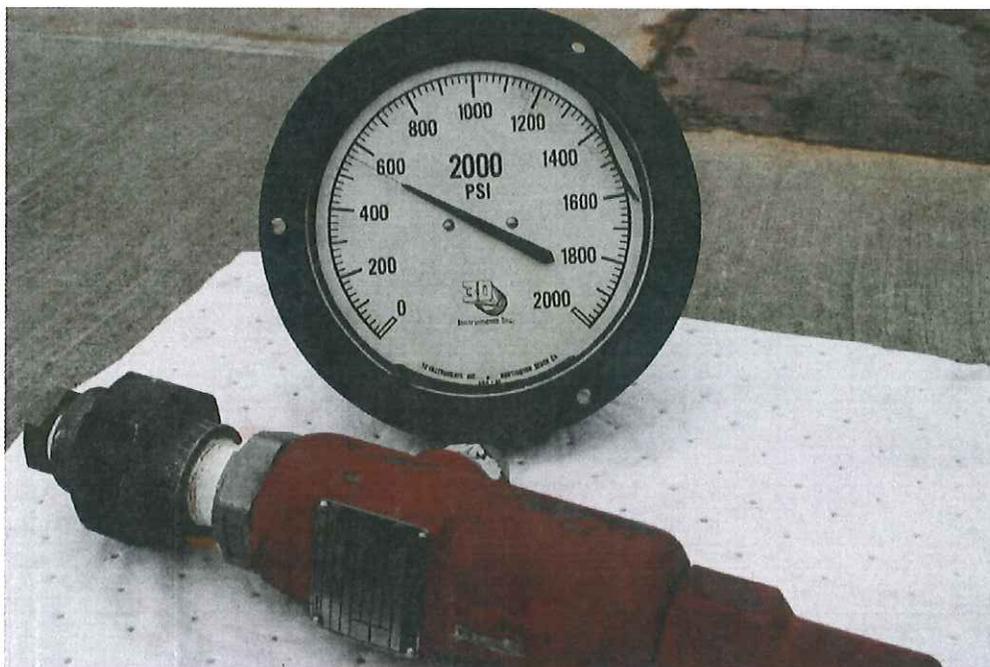


Photo #B-2 of 4

Thermo relief valve (foreground) and front face of pressure gage (background). Both interments were removed from the 20-inch launcher. Photo taken 4/2/2012 by Al Jones

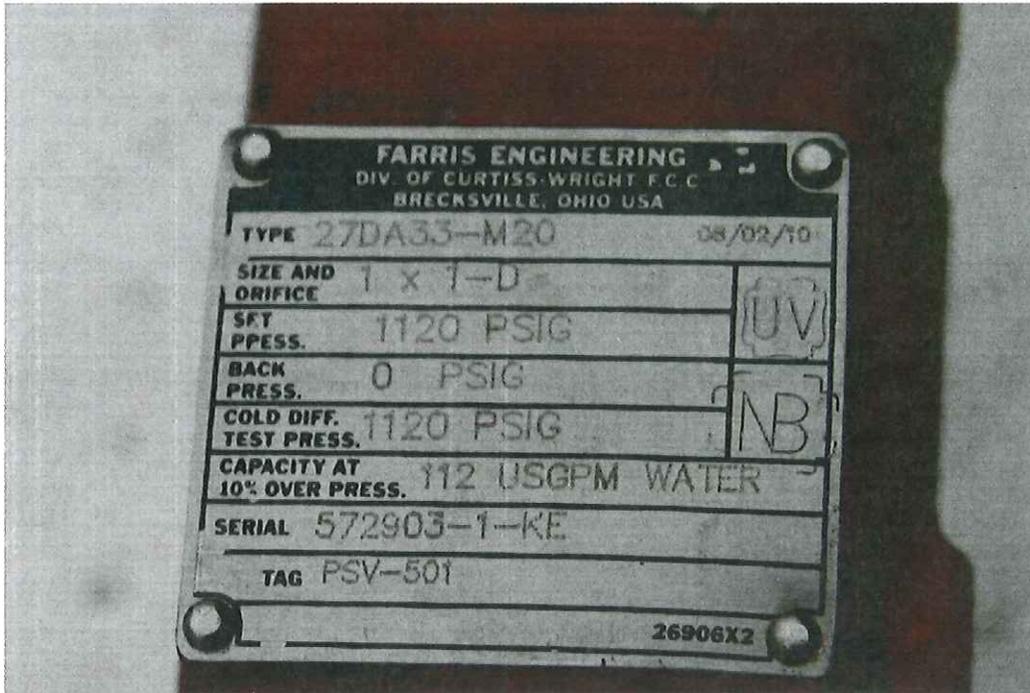
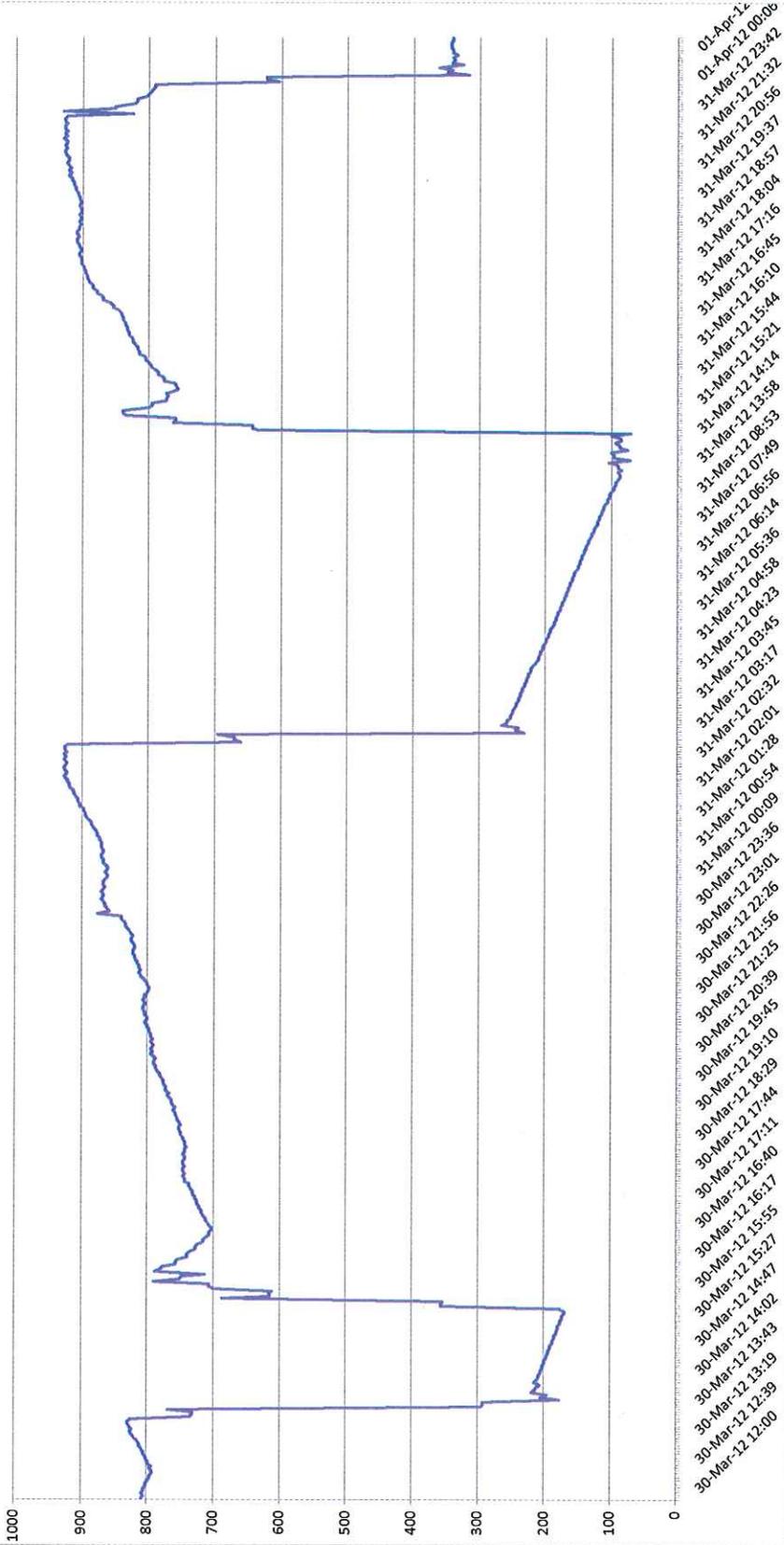


Photo #B-3 of 4
Thermo relief valve face plate.
Photo taken 4/2/2012 by Al Jones



Photo #B-4 of 4
Back ground: 20-inch launcher where the leaks occurred at the sampling port and pressure gauge. The piping has been reconfigured to mitigate vibration from the thermal relief valve. The pressure gauge is isolated from the thermal relief.
Foreground: typical "tree" configuration when the failures occurred.
Photo taken 4/2/2012 by Al Jones

Allen 20" Discharge PSI



Allen 20 Discharge Pressure

Column 1		Column 2		Column 3		Column 4	
Date	PSI	Date	PSI	Date	PSI	Date	PSI
30-Mar-12 12:00:00	808	30-Mar-12 15:37:26	172	30-Mar-12 18:39:10	749	30-Mar-12 22:50:39	819
30-Mar-12 12:03:32	805	30-Mar-12 15:44:01	169	30-Mar-12 18:53:35	752	30-Mar-12 22:50:40	819
30-Mar-12 12:04:00	808	30-Mar-12 15:44:05	169	30-Mar-12 18:53:35	752	30-Mar-12 22:59:32	822
30-Mar-12 12:09:39	805	30-Mar-12 15:44:25	175	30-Mar-12 18:57:05	749	30-Mar-12 23:01:16	825
30-Mar-12 12:09:39	805	30-Mar-12 15:49:50	355	30-Mar-12 18:57:51	752	30-Mar-12 23:01:16	825
30-Mar-12 12:12:52	802	30-Mar-12 15:49:50	355	30-Mar-12 19:03:01	755	30-Mar-12 23:02:29	822
30-Mar-12 12:17:55	802	30-Mar-12 15:50:10	352	30-Mar-12 19:03:05	755	30-Mar-12 23:03:08	825
30-Mar-12 12:17:56	799	30-Mar-12 15:53:23	687	30-Mar-12 19:10:17	758	30-Mar-12 23:08:59	828
30-Mar-12 12:24:40	796	30-Mar-12 15:55:27	615	30-Mar-12 19:10:17	758	30-Mar-12 23:11:41	831
30-Mar-12 12:24:40	796	30-Mar-12 15:55:34	615	30-Mar-12 19:20:54	761	30-Mar-12 23:21:16	834
30-Mar-12 12:31:35	793	30-Mar-12 15:55:34	612	30-Mar-12 19:21:29	758	30-Mar-12 23:21:18	834
30-Mar-12 12:31:35	793	30-Mar-12 16:00:57	699	30-Mar-12 19:22:52	761	30-Mar-12 23:26:34	837
30-Mar-12 12:39:33	796	30-Mar-12 16:01:01	706	30-Mar-12 19:31:40	764	30-Mar-12 23:28:35	840
30-Mar-12 12:41:17	793	30-Mar-12 16:01:04	706	30-Mar-12 19:31:43	764	30-Mar-12 23:30:53	840
30-Mar-12 12:43:11	799	30-Mar-12 16:03:39	790	30-Mar-12 19:37:11	767	30-Mar-12 23:33:43	875
30-Mar-12 12:43:11	799	30-Mar-12 16:06:37	751	30-Mar-12 19:39:20	770	30-Mar-12 23:33:55	858
30-Mar-12 12:46:43	802	30-Mar-12 16:06:53	747	30-Mar-12 19:39:50	767	30-Mar-12 23:36:53	861
30-Mar-12 12:46:43	802	30-Mar-12 16:09:37	713	30-Mar-12 19:41:01	773	30-Mar-12 23:39:13	864
30-Mar-12 12:57:53	805	30-Mar-12 16:10:10	788	30-Mar-12 19:42:29	773	30-Mar-12 23:43:34	864
30-Mar-12 12:57:53	805	30-Mar-12 16:11:58	780	30-Mar-12 19:45:27	773	30-Mar-12 23:43:36	867
30-Mar-12 13:02:48	808	30-Mar-12 16:12:51	777	30-Mar-12 19:45:27	776	30-Mar-12 23:49:08	870
30-Mar-12 13:06:58	811	30-Mar-12 16:17:24	757	30-Mar-12 19:47:10	776	30-Mar-12 23:51:58	867
30-Mar-12 13:11:28	811	30-Mar-12 16:17:25	757	30-Mar-12 19:58:36	779	30-Mar-12 23:51:58	867
30-Mar-12 13:11:29	814	30-Mar-12 16:18:21	754	30-Mar-12 20:00:13	782	30-Mar-12 23:58:41	870
30-Mar-12 13:19:26	817	30-Mar-12 16:23:28	739	30-Mar-12 20:00:13	782	30-Mar-12 23:59:55	867
30-Mar-12 13:23:11	820	30-Mar-12 16:23:28	739	30-Mar-12 20:03:41	785	31-Mar-12 00:07:24	864
30-Mar-12 13:24:51	823	30-Mar-12 16:24:55	736	30-Mar-12 20:06:31	788	31-Mar-12 00:08:19	867
30-Mar-12 13:27:47	826	30-Mar-12 16:28:09	727	30-Mar-12 20:06:31	788	31-Mar-12 00:09:45	867
30-Mar-12 13:28:00	823	30-Mar-12 16:28:09	727	30-Mar-12 20:13:22	791	31-Mar-12 00:09:46	864
30-Mar-12 13:30:11	826	30-Mar-12 16:29:38	724	30-Mar-12 20:36:58	791	31-Mar-12 00:15:15	861
30-Mar-12 13:33:08	829	30-Mar-12 16:34:15	715	30-Mar-12 20:36:59	788	31-Mar-12 00:15:16	861
30-Mar-12 13:33:08	829	30-Mar-12 16:34:15	715	30-Mar-12 20:39:18	791	31-Mar-12 00:21:52	864
30-Mar-12 13:39:02	825	30-Mar-12 16:35:28	712	30-Mar-12 20:53:31	795	31-Mar-12 00:24:37	861
30-Mar-12 13:40:36	735	30-Mar-12 16:40:13	706	30-Mar-12 20:54:36	792	31-Mar-12 00:27:04	861
30-Mar-12 13:40:45	732	30-Mar-12 16:40:13	706	30-Mar-12 20:57:28	795	31-Mar-12 00:27:05	864
30-Mar-12 13:41:01	732	30-Mar-12 16:41:56	703	30-Mar-12 20:58:28	792	31-Mar-12 00:34:34	867
30-Mar-12 13:43:18	768	30-Mar-12 16:41:56	703	30-Mar-12 20:58:28	792	31-Mar-12 00:42:04	867
30-Mar-12 13:46:21	295	30-Mar-12 16:45:59	706	30-Mar-12 21:06:04	795	31-Mar-12 00:42:05	870
30-Mar-12 13:46:25	292	30-Mar-12 16:46:55	709	30-Mar-12 21:06:58	792	31-Mar-12 00:48:50	870
30-Mar-12 13:46:35	292	30-Mar-12 16:48:46	712	30-Mar-12 21:13:43	795	31-Mar-12 00:48:50	867
30-Mar-12 13:48:02	176	30-Mar-12 16:57:05	712	30-Mar-12 21:13:44	795	31-Mar-12 00:54:19	867
30-Mar-12 13:52:04	205	30-Mar-12 16:57:05	715	30-Mar-12 21:18:54	798	31-Mar-12 00:54:19	870
30-Mar-12 13:52:08	195	30-Mar-12 17:01:16	718	30-Mar-12 21:18:54	798	31-Mar-12 00:56:41	870
30-Mar-12 13:52:17	218	30-Mar-12 17:01:19	718	30-Mar-12 21:25:07	801	31-Mar-12 01:06:55	870
30-Mar-12 13:57:40	215	30-Mar-12 17:05:10	722	30-Mar-12 21:25:07	801	31-Mar-12 01:06:56	873
30-Mar-12 13:57:55	212	30-Mar-12 17:05:10	722	30-Mar-12 21:29:42	804	31-Mar-12 01:11:56	873
30-Mar-12 13:58:03	206	30-Mar-12 17:11:24	725	30-Mar-12 21:30:01	801	31-Mar-12 01:11:56	876
30-Mar-12 13:58:16	215	30-Mar-12 17:11:24	725	30-Mar-12 21:30:01	801	31-Mar-12 01:18:57	876
30-Mar-12 14:02:58	211	30-Mar-12 17:15:16	728	30-Mar-12 21:33:15	804	31-Mar-12 01:18:59	879
30-Mar-12 14:09:20	208	30-Mar-12 17:15:16	728	30-Mar-12 21:33:15	804	31-Mar-12 01:21:45	882
30-Mar-12 14:09:20	208	30-Mar-12 17:19:36	731	30-Mar-12 21:45:55	807	31-Mar-12 01:25:22	885
30-Mar-12 14:19:19	205	30-Mar-12 17:19:37	731	30-Mar-12 21:45:55	807	31-Mar-12 01:25:22	885
30-Mar-12 14:19:19	205	30-Mar-12 17:28:29	734	30-Mar-12 21:53:01	804	31-Mar-12 01:28:05	888
30-Mar-12 14:27:16	202	30-Mar-12 17:29:36	737	30-Mar-12 21:53:05	804	31-Mar-12 01:31:47	892
30-Mar-12 14:27:20	202	30-Mar-12 17:31:14	737	30-Mar-12 21:54:28	807	31-Mar-12 01:36:15	895
30-Mar-12 14:35:29	199	30-Mar-12 17:32:33	743	30-Mar-12 21:56:37	804	31-Mar-12 01:42:01	895
30-Mar-12 14:35:29	199	30-Mar-12 17:42:49	743	30-Mar-12 21:56:39	804	31-Mar-12 01:42:03	898
30-Mar-12 14:41:48	196	30-Mar-12 17:42:49	746	30-Mar-12 22:00:55	801	31-Mar-12 01:44:44	898
30-Mar-12 14:41:48	196	30-Mar-12 17:44:30	743	30-Mar-12 22:04:41	798	31-Mar-12 01:49:07	904
30-Mar-12 14:47:31	193	30-Mar-12 17:51:49	746	30-Mar-12 22:04:43	798	31-Mar-12 01:49:09	904
30-Mar-12 14:47:31	193	30-Mar-12 17:51:49	746	30-Mar-12 22:10:17	801	31-Mar-12 01:51:57	907
30-Mar-12 14:53:22	190	30-Mar-12 17:54:02	743	30-Mar-12 22:10:17	801	31-Mar-12 01:51:59	907
30-Mar-12 14:53:22	190	30-Mar-12 17:55:04	746	30-Mar-12 22:12:10	804	31-Mar-12 01:56:03	910
30-Mar-12 14:58:28	187	30-Mar-12 17:55:04	746	30-Mar-12 22:14:45	807	31-Mar-12 01:59:25	913
30-Mar-12 14:58:33	187	30-Mar-12 18:04:22	743	30-Mar-12 22:17:57	810	31-Mar-12 02:01:32	913
30-Mar-12 15:05:11	184	30-Mar-12 18:04:22	743	30-Mar-12 22:20:55	813	31-Mar-12 02:01:33	916
30-Mar-12 15:05:13	184	30-Mar-12 18:06:35	746	30-Mar-12 22:21:52	810	31-Mar-12 02:04:31	919
30-Mar-12 15:12:53	181	30-Mar-12 18:07:40	743	30-Mar-12 22:26:35	813	31-Mar-12 02:10:16	919
30-Mar-12 15:12:53	181	30-Mar-12 18:16:06	743	30-Mar-12 22:26:35	813	31-Mar-12 02:10:18	922
30-Mar-12 15:20:37	178	30-Mar-12 18:16:07	740	30-Mar-12 22:31:59	816	31-Mar-12 02:16:02	922
30-Mar-12 15:20:41	178	30-Mar-12 18:29:35	743	30-Mar-12 22:32:01	816	31-Mar-12 02:16:03	926
30-Mar-12 15:27:37	175	30-Mar-12 18:29:35	743	30-Mar-12 22:36:14	819	31-Mar-12 02:22:15	923
30-Mar-12 15:27:37	175	30-Mar-12 18:33:14	746	30-Mar-12 22:36:14	819	31-Mar-12 02:22:17	923
30-Mar-12 15:37:26	172	30-Mar-12 18:35:27	746	30-Mar-12 22:43:10	822	31-Mar-12 02:25:01	926
		30-Mar-12 18:39:10	749	30-Mar-12 22:43:11	822	31-Mar-12 02:31:03	926

Allen 20 Discharge Pressure

Column 5	
Date	PSI
31-Mar-12 02:31:06	923
31-Mar-12 02:32:41	923
31-Mar-12 02:40:34	927
31-Mar-12 02:44:43	924
31-Mar-12 02:45:21	927
31-Mar-12 02:52:22	922
31-Mar-12 02:52:34	925
31-Mar-12 02:52:39	925
31-Mar-12 03:13:01	921
31-Mar-12 03:13:40	659
31-Mar-12 03:13:45	669
31-Mar-12 03:13:53	669
31-Mar-12 03:13:54	695
31-Mar-12 03:17:42	231
31-Mar-12 03:19:23	244
31-Mar-12 03:19:26	240
31-Mar-12 03:19:33	266
31-Mar-12 03:24:53	258
31-Mar-12 03:25:07	258
31-Mar-12 03:25:10	252
31-Mar-12 03:29:48	252
31-Mar-12 03:35:05	249
31-Mar-12 03:40:52	249
31-Mar-12 03:40:55	246
31-Mar-12 03:45:28	243
31-Mar-12 03:45:31	243
31-Mar-12 03:51:55	240
31-Mar-12 03:51:57	240
31-Mar-12 03:56:06	237
31-Mar-12 03:56:07	237
31-Mar-12 04:01:28	234
31-Mar-12 04:07:02	234
31-Mar-12 04:07:03	231
31-Mar-12 04:12:02	231
31-Mar-12 04:12:03	228
31-Mar-12 04:16:50	228
31-Mar-12 04:16:50	225
31-Mar-12 04:23:31	225
31-Mar-12 04:23:32	222
31-Mar-12 04:27:40	222
31-Mar-12 04:27:41	219
31-Mar-12 04:32:16	216
31-Mar-12 04:38:07	213
31-Mar-12 04:42:27	210
31-Mar-12 04:42:29	210
31-Mar-12 04:47:33	207
31-Mar-12 04:47:34	207
31-Mar-12 04:52:47	204
31-Mar-12 04:58:34	204
31-Mar-12 04:58:35	201
31-Mar-12 05:03:25	198
31-Mar-12 05:03:29	198
31-Mar-12 05:09:43	195
31-Mar-12 05:09:43	195
31-Mar-12 05:14:45	192
31-Mar-12 05:19:37	192
31-Mar-12 05:19:40	189
31-Mar-12 05:23:58	186
31-Mar-12 05:23:59	186
31-Mar-12 05:29:28	183
31-Mar-12 05:29:28	183
31-Mar-12 05:36:43	180
31-Mar-12 05:36:45	180
31-Mar-12 05:42:50	177
31-Mar-12 05:48:30	177
31-Mar-12 05:48:32	174
31-Mar-12 05:54:31	174
31-Mar-12 05:54:32	171
31-Mar-12 05:58:02	171
31-Mar-12 06:00:58	168
31-Mar-12 06:00:58	168
31-Mar-12 06:08:05	165
31-Mar-12 06:12:40	165
31-Mar-12 06:14:50	162
31-Mar-12 06:14:52	162

Column 6	
Date	PSI
31-Mar-12 06:21:49	159
31-Mar-12 06:21:49	159
31-Mar-12 06:28:29	156
31-Mar-12 06:35:19	156
31-Mar-12 06:35:20	153
31-Mar-12 06:42:31	150
31-Mar-12 06:42:31	150
31-Mar-12 06:47:59	147
31-Mar-12 06:48:01	147
31-Mar-12 06:56:06	144
31-Mar-12 06:56:07	144
31-Mar-12 07:02:47	141
31-Mar-12 07:02:51	141
31-Mar-12 07:10:49	138
31-Mar-12 07:10:52	138
31-Mar-12 07:18:23	135
31-Mar-12 07:25:10	135
31-Mar-12 07:25:12	132
31-Mar-12 07:34:03	129
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